AQUATIC COLEOPTERA FROM SOUTHWESTERN IRAN (HALIPLIDAE, DYTISCIDAE, AND GYRINIDAE, WITH A NOTE ON HYDROPHILIDAE)[1]

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Abstract

Southwestern Iran was surveyed for water beetles, and records for the following are reported herein: Haliplidae (2 genera, 2 species); Dytiscidae (16 genera, 24 species); and Gyrinidae (2 genera, 2 species). Records for Hydrophilidae (10 genera, 34 mostly unidentified species) are summarized in a simple list.

Fars Province (Ostan-e-Fars) was surveyed for water beetles in an area of about 200+ km radius from Shiraz during 1969-1974. Results from 1 year of this study (1970-1971) were described earlier (Hosseinie 1974); this paper gives an expanded treatment of the Hydradephaga.

The accompanying map (Fig. 1) shows some of the collecting sites. Details of collecting sites are given in the Appendix; sites not shown on the map are located in terms relative to Shiraz.

Members of several families of aquatic beetles were collected, with most of the identified species belonging to Dytiscidae. Large numbers of species and specimens belong to Hydrophilidae; this family is treated here only by a list of the genera and the few identified species.

Habitat and seasonal distributions of the Haliplidae, Dytiscidae, and Gyrinidae are analyzed in Tables I and II.

Because literature records in the text are repetitive, these are numbered in italic for easy referral to the Literature Cited.

Family Haliplidae

1. *Haliplus variegatus* Sturm: sites 7, 10, 11, 18, 22, 44. A Mediterranean species, extending deep into Central Europe (*11*). First reported from Iran by Hosseinie (*8*); not widely distributed but numerous when found; mostly found in Zarghan Marshes, also in large, shallow, slow-moving streams; most abundant in May and June.

2. *Peltodytes caesus* Duft.: sites 8, 11, 19, 21, 26. A Mediterranean species (*11*); habitat, stagnant water (*6*). Previously reported from northern Iran and Fars (*8, 9*); in Fars, mostly found in temporary bodies of stagnant water, also in a shallow, slow-moving stream in Barm-e-Delak (*8*); most abundant in June.

Family Dytiscidae: Subfamily Noterinae

1. *Noterus ponticus* Sharp: sites 7, 22, 25, 28, 41, 42, 44. Previously reported from Iraq (*11*), apparently new for Iran. Prefers large, shallow, slow moving streams and marshy areas; most abundant in June, July, November, and December.

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[1] This study was partly supported by the Pahlavi University Research Council, and was partly done in the Zoology Laboratories, Indiana University, Bloomington, Indiana, U.S.A.

Family Dytiscidae: Subfamily Laccophilinae

2. *Laccophilus hyalinus* (Deg.): sites 8, 11, 18, 21, 22, 26, 28, 31, 40. Common almost throughout Palaearctic *(11)*; habitat, ponds and clear running water *(6, 11)*. In Fars, most abundant in the shallow, spring-fed stream of Barm-e-Delak *(8)* and similar locations, especially in June and October.

3. *L. minutus* (L.): sites 4-8, 11, 12, 18, 21. A common Palaearctic species *(11)*, previously reported from northern and northwestern Iran *(4, 5, 9, 12)*; habitat, calm waters with little or no current *(6, 11)*. In Fars, mostly in marshes, ditches, and waters with little current; abundant in June.

4. *L. sharpi* Rég.: sites 7, 39. An Oriental species *(6)*, distributed throughout tropical Asia *(11)*, previously reported from an unspecified locality in Iran *(5)*. According to Zaitsev *(11)*, "Zimmermann thinks that *Noterus ponticus* Sharp from Iraq belongs to this species"; this may indicate some confusion in nomenclature. In Fars (new record), scarce but habitat probably water with little or no current.

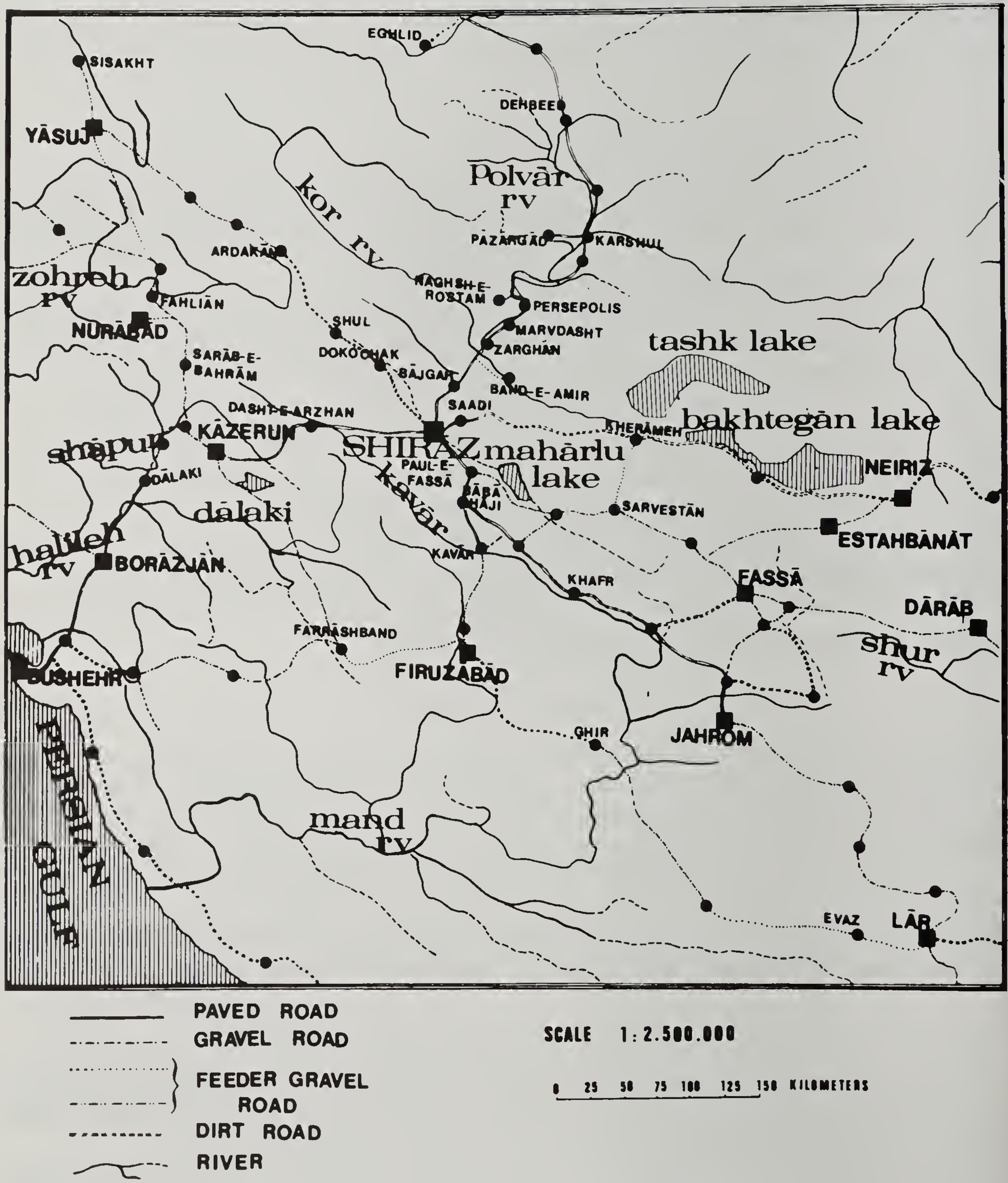

Fig. 1. Map showing part of the wetlands of southwestern Iran, with some of the collecting sites listed in this paper.

FAMILY DYTISCIDAE: SUBFAMILY HYDROPORINAE

5. *Hydrovatus acuminatus* Motsch.: sites 12, 39. Apparently new for Iran, rare in Fars, prefers calm or stagnant water.

6. *H. maculatus* Sharp: sites 17, 39, 49. Guéorguièv (*5*) reported *H. (Vathydrus) cuspidatus maculosus* from Iran and Egypt, perhaps in reference to this species; he also reported a female *H. (Vathydrus)* from Iran (Feschar-Nachtfang?) but did not describe it; and he reported another female from Kerman (*3*), pointing to its close similarity to *H. sordidus* Sharp. In Fars (new record), rare, in very slow moving or calm and stagnant water, in May and July.

7. *Guignotus pusillus* (Fabr.): sites 2-7, 10-12, 14, 17-21, 23, 24, 26, 37-41, 48-52. Predominantly Palaearctic (*10*), widely distributed (*11*, as *Bidessus*). Widely distributed in Iran (*5, 9*) including Fars (*8*). Found in many types of habitats, most abundant in small or large streams with slow moving water; several specimens found in mud, some in cold water, many in sewage outputs; occurs in most months, most abundant in June.

8. *G. signatellus* (Klug): sites 2, 3, 7, 11, 12, 14, 17, 18, 22, 26, 38, 39, 47, 48, 50-52. A Mediterranean species (*11*), previously reported from Iran (*1, 5, 11, 12*). Frequently found with preceding species, but less abundant; habitats include marshlands, sides of very slow streams, ponds, pools, abundant in sewage output; most abundant in May through August.

9. *Hygrotus inaequalis* (Fabr.): sites 11, 18. A common Palaearctic species (*11*); prefers very slow-moving streams and cold months of the year. Apparently new for Fars.

10. *Coelambus confluens* (Fabr.): sites 4, 6, 11, 18, 38, 40. Considered Palaearctic (*1*), Mediterranean (*11*), or Touranian (*7*). Reported from Iran (*1, 9, 11, 12*). Mostly in water with a little mud (*6*). In Fars, in calm water, mostly at edge of running water; most numerous in June.

11. *C. lernaeus* (Schaum): sites 6-8, 11, 12, 18, 27. Mediterranean (*11*), central and eastern Mediterranean (*2*); previously reported from Iran (*11, 12*). In Fars, shares most habitats and seasons with preceding species.

12. *Hydroporus pubescens* Gyll.: sites 8, 11, 14, 18, 46. Palaearctic (*11*), reported from Iran (*11, 12*). In Fars, in small streams with little current, and marshy areas; most abundant in April.

13. *Hypophorus musicus* (Klug) (or *Herophydrus musicus*): sites 2-8, 11, 12, 18, 19, 22, 26, 37, 47, 49. Mediterranean (*11*) or Touranian (*7*); common in Iran (*5, 11, 12*). In Fars, in large, shallow, slow moving streams; most numerous in June and July.

14. *Potamonectes lanceolatus* Walk.: sites 7, 10-12, 18, 21, 25-28, 36, 37, 43, 44. *P. scutellaris* Sharp and *P. islamiticus* Sharp are synonyms of *P. lanceolatus,* according to Balfour-Browne (see *3*). Eastern Mediterranean to Egypt, not uncommon in Iran, several records from southwestern Iran (*3, 4, 9*). In Fars, most numerous in April.

15. *Scarodytes halensis* (Fabr.): sites 21, 26, 31, 32, 40, 42-45. Mediterranean (*11*), reported from Iran (*11, 12*). .In Fars, in small streams, most numerous in November when water temperature is low, in agreement with habitat preferences stated by Zaitsev (*11*).

FAMILY DYTISCIDAE: SUBFAMILY COLYMBETINAE

16. *Agabus biguttatus* Oliv.: sites 40, 42. Boreal (*11*), previously reported from Iran (*4, 9, 11, 12*). In calm water or water with little current in hills and low mountains (*6*). In Fars, only in small streams, May through November.

17. *A. bipustulatus* (L.): sites 19, 34. Palaearctic (*11*), previously reported from Iran (*4, 9, 11, 12*). In stagnant water, rarely in running water (*6, 11*). In Fars, in stagnant waters of ponds and marshes; mainly in June.

18. *A. conspersus* (Mrsh.): sites 7, 13, 14, 18, 21, 26, 41, 42. Mediterranean (*11*) or Palaearctic (*2*), previously reported from Iran (*2, 4, 8, 9*). Zaitsev (*11*) said that "records from Middle Asia need confirmation, since this species may have been confused

with *dichrous* (Sharp)", but recorded the species from Iraq and northern India. Inhabits stagnant fresh or salt water *(6)*. In Fars, in small streams; more abundant in April and July.

19. *Colymbetes semenovi* Jak.: site 18. A European steppe species *(11)*. Guéorguièv *(2)* said that "the species very much resembles *fuscus* L., except for the stridulatory organ" and that similarity between the 2 species makes exact determinations of their distributions difficult. The *C. fuscus* reported from Iran by Peschet in 1919 may really be *C. semenovi (2)*, and other records of *C. fuscus* from Middle Asia may refer to *C. semenovi (11)*. A rare species, at least in Fars; my only specimen was caught in a pool in April; also reported from Fars by McCullers *(9)*.

FAMILY DYTISCIDAE: SUBFAMILY DYTISCINAE

20. *Eretes stricticus* (L.): sites 1, 14. A tropical species which has spread into the south of the Palaearctic *(11)*, this species is variable in size, color, form, and sometimes in shape of pronotal hind angles *(10)*. Reported from Iran (*9, 12*; and *11*, as subspecies *helvolus* Klug). Rare in Fars, only in warmer months; one of my 2 specimens was caught on the surface of a private pool, the other on the surface of calm water of a pond off a stream.

21. *Hydaticus histrio* Clark: site 25. Northern India and Iran *(11)*, rare in southern Iran *(5)*; see also Zimmermann *(12)*, Balfour-Browne *(1)*, and McCullers (*9*, including record from Fars). Rare in Fars, July, in calm water of spring-fed pond.

22. *Prodaticus pictus* Sharp: site 25. Reported from Iran *(1)*. Rare in Fars, 2 specimens collected along with preceding species.

23. *Cybister lateralimarginalis* (Deg.): sites 6-8, 11, 14, 35, 36, 42. Mediterranean *(11)* or Palaearctic (*7*, as *lepidus*); Zaitsev *(11)* gave the distribution as "in the greater part of the Palaearctic Region, except in the north; forming indistinctly defined local forms towards the east." Reported from Iran *(8, 9)*. In Fars, in calm water; most abundant in cool part of the year (October); 1 specimen collected in clear, running water from a "Qanat"[2] (Table I).

24. *C. tripunctatus gotschi* Hochh.: sites 7, 9, 11, 14, 36, 49, 52. East Mediterranean *(11)* or Oriental (*7*, var. *asiaticus* Sharp); *asiaticus* "should be considered as a simple synonym of var. *gotschi*" *(2)*. Reported from Iran *(8, 9)*. Found in calm waters, mainly in marshlands or ponds off rivers *(6)*. In Fars, mainly in latter habitat; 2 specimens were collected in clear, running water off a "Qanat", and 9 were collected while out of water, resting or running (Table II).

FAMILY GYRINIDAE

1. *Aulonogyrus concinnus* (Klug): sites 32, 33, 39. Mediterranean *(11)*; reported from Iran *(5, 9, 11)*. In various types of water bodies, stagnant or running, puddles or small marshes *(11)*. In Fars, mainly on surface of clear, small, slow-moving streams, along with following species; most abundant in June.

2. *Gyrinus distinctus* Aubé: sites 6, 19, 26, 33, 35, 38, 39, 42. Mediterranean *(11)*; reported from Iran *(4, 9, 11, 12)*. Found in "clear and calm water or at the edge of the slow-moving water" *(6)*. In Fars, most numerous on surface of clear, small, slow-moving streams, in a large group along with the preceding species.

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[2] A *Qanat* is a series of artificial wells in an alluvial slope-plain system connected from the bottom by means of a horizontal underground canal to collect the aquifers vertically and horizontally for irrigation.

TABLE I. Hydradephaga of Fars Province, Iran: Numbers collected per habitat.

Species	Marsh-lands	Large streams	Small streams	Pools, Ponds	Other	Total
Haliplus variegatus Sturm	511	86	14	2	-	613
Peltodytes caesus Duft.	-	10	4	2	-	16
Noterus ponticus Sharp	75	228	-	11	-	314
Laccophilus hyalinus (Deg.)	-	114	17	8	-	139
L. minutus (L.)	45	12	11	5	-	73
L. sharpi Rég.	1	-	-	2	-	3
Hydrovatus acuminatus Motsch.	-	-	1	1	-	2
H. maculatus Sharp	-	3	-	2	-	5
Guignotus pusillus (Fabr.)	76	342	126	202	-	746
G. signatellus (Klug)	15	26	9	30	-	80
Hygrotus inaequalis (Fabr.)	-	9	-	1	-	10
Coelambus confluens (Fabr.)	-	15	8	1	-	24
C. lernaeus (Schaum)	3	11	2	7	-	23
Hydroporus pubescens Gyll.	34	13	58	-	-	105
Hypophorus musicus (Klug)	1	83	11	9	-	104
Potamonectes lanceolatus Walk.	3	30	34	93	-	160
Scarodytes halensis (Fabr.)	-	65	367	3	-	435
Agabus biguttatus Oliv.	-	-	17	-	-	17
A. bipustulatus (L.)	1	-	-	9	-	10
A. conspersus (Mrsh.)	5	3	47	4	-	59
Colymbetes semenovi Jak.	-	-	-	1	-	1
Eretes sticticus (L.)	-	1	-	1	-	2
Hydaticus histrio Clark	-	-	-	4	-	4
Prodaticus pictus Sharp	-	-	-	2	-	2
Cybister lateralimarginalis (Deg.)	20	8	-	-	1	29
C. tripunctatus gotschi Hochh.	6	15	-	3	11	35
Aulonogyrus concinnus (Klug)	-	22	300	30	-	352
Gyrinus distinctus Aubé	3	41	953	8	-	1005
Total	799	1137	1979	441	12	4368

TABLE II. Hydradephaga of Fars Province, Iran: Numbers collected per season.

Species	Spring III-V	Summer VI-VIII	Fall IX-XI	Winter XII-II	Total
Haliplus variegatus Sturm	270	335	2	6	613
Peltodytes caesus Duft.	4	12	-	-	16
Noterus ponticus Sharp	11	186	65	52	314
Laccophilus hyalinus (Deg.)	36	39	51	13	139
L. minutus (L.)	16	51	4	2	73
L. sharpi Rég.	3	-	-	-	3
Hydrovatus acuminatus Motsch.	1	1	-	-	2
H. maculatus Sharp	3	2	-	-	5
Guignotus pusillus (Fabr.)	94	498	133	21	746
G. signatellus (Klug)	13	53	7	7	80
Hygrotus inaequalis (Fabr.)	2	-	5	3	10
Coelambus confluens (Fabr.)	3	18	2	1	24
C. lernaeus (Schaum)	2	19	-	2	23
Hydroporus pubescens Gyll.	62	41	-	2	105
Hypophorus musicus (Klug)	16	46	27	15	104
Potamonectes lanceolatus Walk.	75	72	13	-	160
Scarodytes halensis (Fabr.)	5	96	334	-	435
Agabus biguttatus Oliv.	2	9	6	-	17
A. bipustulatus (L.)	1	9	-	-	10
A. conspersus (Mrsh.)	32	25	4	-	59
Colymbetes semenovi Jak.	1	-	-	-	1
Eretes sticticus (L.)	-	2	-	-	2
Hydaticus histrio Clark	-	4	-	-	4
Prodaticus pictus Sharp	-	2	-	-	2
Cybister lateralimarginalis (Deg.)	9	5	15	-	29
C. tripunctatus gotschi Hochh.	21	12	2	-	35
Aulonogyrus concinnus (Klug)	50	302	-	-	352
Gyrinus distinctus Aubé	90	905	10	-	1005
Total	822	2742	680	124	4368

Family Hydrophilidae

1. *Berosus spinosus* Stev.
2. *Enochrus* Thomson (4 species, incl. *E. quadripunctatus* Herbst).
3. *Hydrochara caraboides* L.
4. *Hydrochus* Leach (1 species).
5. *Hydrophilus (Hydrous)* piceus Esch.
6. *Helophorus* Fabr. (10 species).
7. *Laccobius* Er. (5 species).
8. *Ochthebius* Leach (6 species).
9. *Paracymus* Thomson (4 species).
10. *Sternolopus decens* Zait.

Discussion

Table I indicates that, in Fars, numbers of water beetle species are highest in pools, ponds, or sides of running water, whereas specimens are most abundant in small streams. Species and individuals are most numerous in spring and summer, and summer seems to be the favorite season for adult emergence (Table II). More work needs to be done toward recording the species of aquatic Coleoptera of Iran and their distributions, as indicated by the many new records given here, since most of the country has not yet been explored. A series of detailed studies are underway by me for this purpose.

Acknowledgments

I thank Frank N. Young (Indiana University, Bloomington, Indiana) for valuable assistance including reading of the manuscript. I thank my colleagues who helped with identifications and/or provided materials for comparison: Hugh B. Leech (California Academy of Sciences); G. Wewalka (Austria); F. Angelini (Italy); and F. Pederzani (Italy). Thanks are also due to A. Bayat and K. Elmi, technicians at the Department of Biology, Pahlavi University, for the collections they helped to build.

Appendix: Collecting Sites

Northeast of Shiraz. Sites are mainly the small or large branches of the Kor or Polvar Rivers and associated ponds.

1. Ab-e-Barik (Bajgah)—private pool.
2. Road to Sivand.
3. Sivand River.
4. Marvadasht: Ghassem Abad.
5. Zerareh—water from Daryush Dam (Sadd-e-Daryush-e-Kabir) forming a fast running river.
6. Shikh-Bid—springs forming a river.
7. Zarghan marshes (Hosseinie 1974).

East of Shiraz.

8. Barm-e-Delak—a series of small ditches and a shallow, expanded stream (Hosseinie 1974).

Southeast of Shiraz. The streams and/or associated ponds where collections were made finally join the Kavar River, which itself later unites with the Mand River.

9. Jahrom—ponds and small streams in gardens of town.
10. Road to Jahrom.
11. Paul-e-Fassa—a wide, shallow river and a series of ditches (Hosseinie 1974).
12. Road to Paul-e-Fassa—water from the sewage system of the Shiraz airport, running to join one of the branches of the Kavar River.
13. Road to Fassa: Chah-e-Zangoo—water from the water pump close to the road, forming a pond and a stream.
14. Barm-e-Shur marshes (Hosseinie 1974).
15. Salt Lake (Maharlu Lake)—expanded, slow-moving stream which empties into the lake.
16. Ghomp-e-Atashkadeh (close to Estahbanat = Estahban).

South of Shiraz. Collections were made in small streams or rivers and in associated stagnant waters. These finally join the Kavar (Ghara Ghach) or Shur Rivers, both of which join the Mand River.

17. Barm-e-Babahaji—a series of ponds and streams formed by several springs.
18. Peer-e-Bano—as in site 17.
19. Paul-e-Berenji—as in site 17.
20. Kavar River—next to Kavar area.
21. Soltan Abad.
22. Road to Firuzabad.
23. Tang-e-Ab (road to Firuzabad).
24. Jovakoon (road to Firuzabad).

Southwest of Shiraz.

25. Farrashband: Cheshmeh Ab-e-Talkh—springs forming a pond.

West of Shiraz. The streams and rivers join the Shapur River, which later joins the Halileh River and finally empties into the Persian Gulf.

26. Several ponds and small streams along road to Dasht-e-Arzhan.
27. Chenar-e-Rahdar.
28. Paul-e-Ghara Ghach.
29. Paul-e-Zeniyoon.
30. Benings and Beiza.
31. Koomereh-e-Sorkhi.
32. Hosseinabad.
33. Chelcheshmeh—springs forming small streams.
34. Dasht-e-Arzhan marshes (Hosseinie 1974).
35. Dasht-e-Arzhan—water originating from Cheshmeh Salman springs, forming a pond on one side of the paved road and a fall on the other side of the road to supply the marshes.
36. Road to Kazerun—places between Dasht-e-Arzhan and Kazerun where ponds or streams were present.
37. Tang-e-Chowgan (road to Kazerun).
38. Seid Hossein (road to Kazerun)—ponds formed by springs.
39. Paul-e-Abguineh (road to Kazerun).

Northwest of Shiraz. Sites are mainly from sides or expanded parts of rivers and streams which finally join either the Zohreh River (which empties into the Persian Gulf) or the Abkhersan River (which joins the Karun River).

40. Road to Ardakan (Ghassroddasht)—places such as small rivers, streams, and associated ponds.
41. Cheshmeh-e-Darreh Bidi—springs starting in the hills form streams and ponds.
42. Dokoohak—streams and ponds originating from springs and Qanats.
43. Chenarsookhteh.

44. Road between Hosseinabad and Bezein.
45. Bezein.
46. Road between Ardakan and Yasuj.
47. Road from Kazerun to Nurabad.
48. Dorudzan River.
49. Sarab-e-Bahram.
50. Ab-e-Gandoo—a mineral water pond; beetles were found in mud.
51. Fahlian.

Town of Shiraz.

52. Collections made in large, shallow, rather stagnant pools in different places in town.

LITERATURE CITED

1. BALFOUR-BROWNE, J. 1951. Coleoptera: Haliplidae, Dytiscidae, Gyrinidae, Hydraenidae, Hydrophilidae. Pages 179-220, plates X-XI, *In*: Expedition to South-West Arabia 1937-8, Vol. 1, Nos. 16-19, p. 179-306, pl. X-XIV. British Museum (Natural History), London.

2. GUÉORGUIEV, V. B. 1963. Contribution a l'étude des Coléoptères Hydrocanthares (Haliplidae et Dytiscidae) d'Afghanistan. Opuscula Ent. 28(3):215-222.

3. ————. 1965a. Sur la faune des Coléoptères Hydrocanthares d'Iran: Academie Bulgare des Sciences. Bull. Inst. Zool. Mus. 19:116-117 (Resume).

4. ————. 1965b. Notes sur les Coléoptères Hydrocanthares d'Iran (Dytiscidae et Gyrinidae). Reichenbachia (Mus. Tierk. Dresden) 4:255-259.

5. ————. 1965c. Zoologische Ergebnisse der österreichischen Iran—Expedition 1949/50 Karakorum—Expedition 1958 und Irak—Expedition 1963 (Coleoptera: Dytiscidae et Gyrinidae) 5:113-118.

6. Guignot, F. 1947. Faune de France. 48. Coléoptères Hydrocanthares. Paul Lechevalier, 12, Rue de Tournon (VI^{e}), Paris, 286 p.

7. ————. 1954. Dytiscides recoltés par la Yale North Indian Expedition au Kashmir et au Pendjab. Opusc. Ent. 19(2-3):221-224.

8. HOSSEINIE, SH. 1974. Water beetles found in the vicinity of Shiraz, Iran (Coleoptera: Dytiscidae, Noteridae, Haliplidae, Gyrinidae and Hydrophilidae). Coleopt. Bull. 28(4):237-243.

9. MCCULLERS, R. B. 1976. Preliminary report of aquatic insect survey of Iran. Prepared in cooperation with the National Museum of Natural History (MMTT) and the American Peace Corps. Iranian Department of Environment. Human Environment Division. Tehran, Iran.

10. VAZIRANI, T. G. 1970. Fauna of Rajasthan, India. Part 5. Aquatic beetles (Insecta: Coleoptera: Dytiscidae). Rec. Zool. Surv. India 62(1-2):29-49.

11. ZAITSEV, F. A. 1972 (1953). Fauna U.S.S.R., Coleoptera. Vol. IV. (Families Amphizoidae, Hygrobiidae, Haliplidae, Dytiscidae and Gyrinidae). Israel Program for Scientific Translations, Jerusalem, 401 p.

12. ZIMMERMANN, A. 1920. Coleopterorum Catalogus. Pars 71. Dytiscidae, Haliplidae, Hygrobiidae, Amphizoidae. Berlin, 326 p.